

Essays on Epistemology and Evolutionary Game Theory

av

Elias Tsakas

AKADEMISK AVHANDLING

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Abstract

This thesis has two parts, one consisting of three independent papers in epistemology (Chapters 1-3) and another one consisting of a single paper in evolutionary game theory (Chapter 4):

- (1) “Knowing who speaks when: A note on communication, common knowledge and consensus” (together with Mark Voorneveld)

We study a model of pairwise communication in a finite population of Bayesian agents. We show that, if the individuals update only according to the signal they actually hear, and they do not take into account all the hypothetical signals they could have received, a consensus is not necessarily reached. We show that a consensus is achieved for a class of protocols satisfying “information exchange”: if agent A talks to agent B infinitely often, agent B also gets infinitely many opportunities to talk back. Finally, we show that a commonly known consensus is reached in arbitrary protocols, if the communication structure is commonly known.

- (2) “Aggregate information, common knowledge and agreeing not to bet”

I consider gambles that take place even if some – but not all – people agree to participate. I show that the bet cannot take place if it is commonly known how many individuals are willing to participate.

- (3) “Testing rationality on primitive knowledge” (together with Olivier Gossner)

The main difficulty in testing negative introspection is the infinite cardinality of the set of propositions. We show that, under positive conditions, negative introspection holds if and only if it holds for primitive propositions, and is therefore easily testable. When knowledge arises from a semantic model, we show that, further, negative introspection on primitive propositions is equivalent to partitional information structures. In this case, partitional information structures are easily testable.

- (4) “The target projection dynamic” (together with Mark Voorneveld)

We study a model of learning in normal form games. The dynamic is given a microeconomic foundation in terms of myopic optimization under control costs due to a certain status-quo bias. We establish a number of desirable properties of the dynamic: existence, uniqueness, and continuity of solution trajectories, Nash stationarity, positive correlation with payoffs, and innovation. Sufficient conditions are provided under which strictly dominated strategies are wiped out. Finally, some stability results are provided for special classes of games.

Keywords: Common knowledge, communication, consensus, betting, primitive propositions, negative introspection, information partition, projection, learning.

JEL Codes: C72, D80, D81, D82, D83, D84, D89.

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Contact information: Elias Tsakas, Department of Economics, School of Business, Economics and Law, University of Gothenburg, Box 640, SE- 40530, Sweden, Phone: +46(0)317864106, Fax: +46(0)317861326, Email: Elias.Tsakas@economics.gu.se